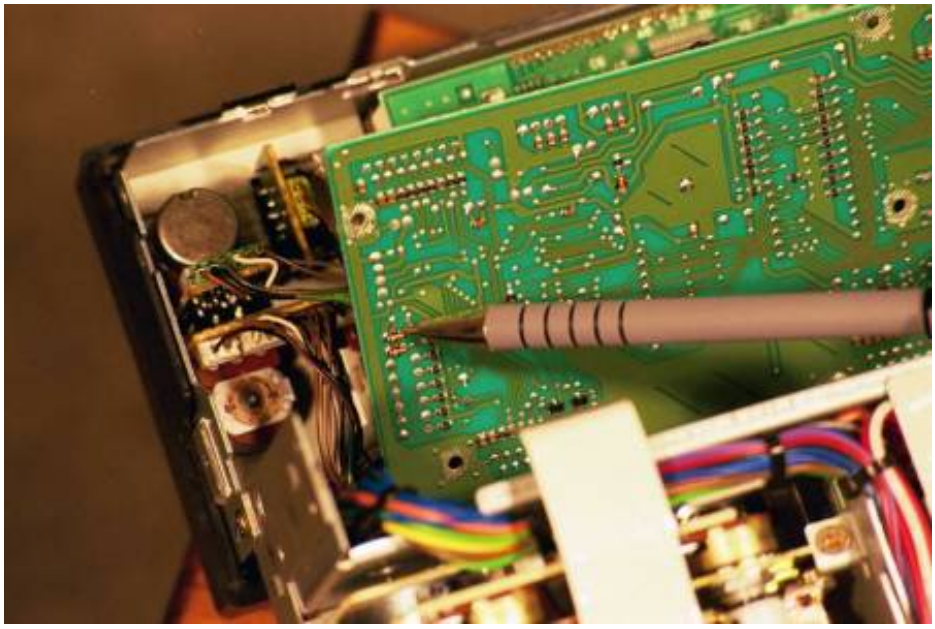
TS-450

Expand RF M/C — General coverage transmission modification for the TS-450 and TS-690

1 - Disconnect the power and antenna.
2 - Remove the top and bottom covers from the radio (Take all 14 Screws)
3 - Remove the top screws { countersunk } from each side of the front panel.
4 - Loosen the bottom screws { countersunk } from each side of the panel.
5 - Carefully pull the top front panel forward to expose the digital beard.
6 - Remove the 7 screws from the digital board.
7 - Disconnect the 5 cables from the digital board.
8 - Rotate the board towards the front panel to gain access to the back side of the board.
9 - Locate and remove **Diode D 27.** Do not pry up the diode. The traces will rip apart.
10 - Reassemble the radio.

www.r6-ru4montesecchieta.it

IZ5CCV



TS-450/690 Low mic gain w/DSP-100

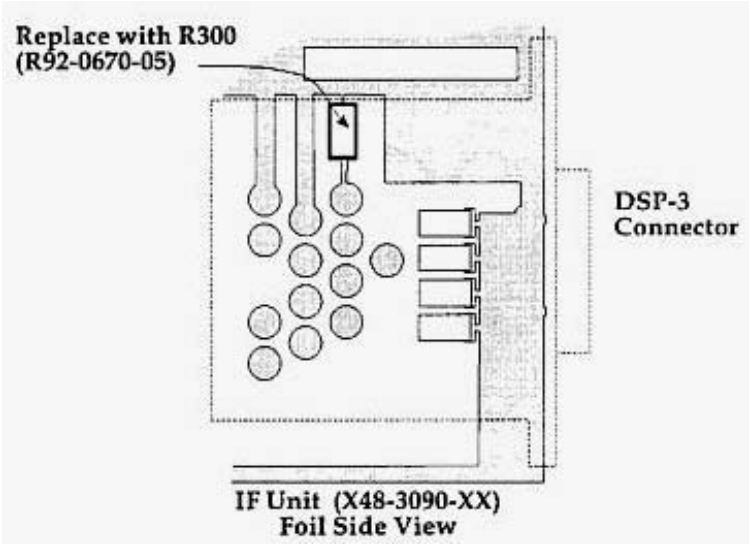
Service Bulletin no. 1032

Symptom:
Proper microphone gain/ALC readings cannot be obtained unless the user adjusts the TX GAIN potentiometer on the rear of the DSP-100. This irregularity is caused of the DSP-100 MIC amplifier (IC-5).

Corrective action:
Remove capacitor C200 from the IF unit on the transceiver, and replace it with R300, a chip jumper wire.

Parts required:

Qty	Description	Kenwood Part No.	Circuit description
1	Chip jumper	R92-0670-05	R300



Caution: *This modification requires soldering equipment rated for CMOS type circuits. It also requires familiarity with surface mount soldering techniques. If you do not have the proper equipment or knowledge do not attempt this modification yourself. Seek qualified assistance.*

TS-450S Parts change

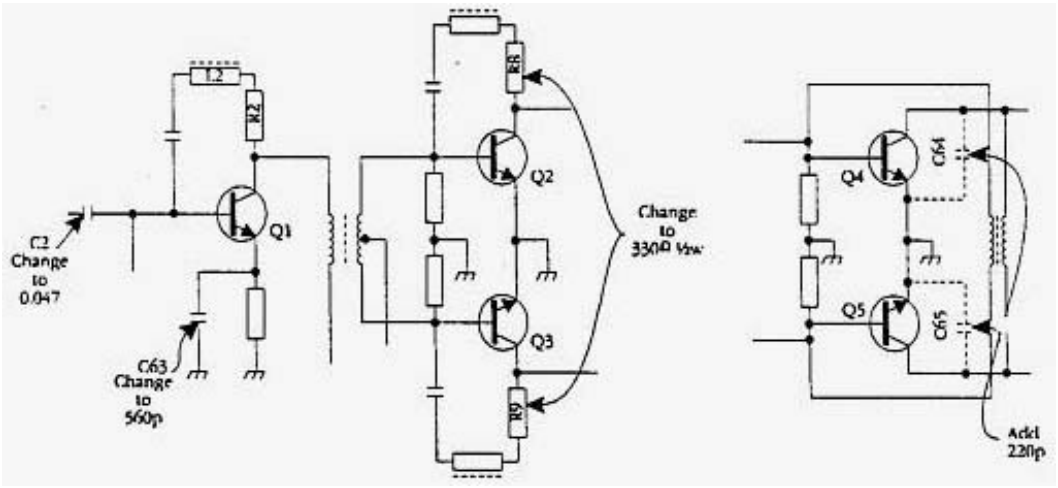
Service Bulletin no. 1036

The 2SC2509 driver transistor are no longer available. They have been discontinued by the manufacturer. A substitute transistor (2SC3133) is available but requires some minor circuit changes. These changes are detailed below.

Parts required:

Qty	Description	Kenwood Part No.	Circuit description
2	Driver transistor	2SC3133	Q2, Q3
2	330 ohm 1 watt carbon resistor	RC05GF2H331J	R8, R9
1	.047 µF ceramic capacitor	C91-0119-05	C2
2	220 pF ceramic capacitor	CC45SL2H221J	C64, C65
1	560 pF ceramic capacitor	CC45SL2H561J	C63

Note: C64 and C65 should be soldered directly to the collector and emitter pins of the final transistor Q4 and Q5.



TS-450S/690S Noisy encoder

Service Bulletin no. 1059

Symptom:
When tuning the Main Encoder of the TS-450S/690S with bare hands you may encounter a "scratching" noise in the speaker if an antenna with a high SWR is used. If gloves are worn no problem is encountered. This occurs because the shaft of the encoder is not grounded.

Countermeasure: Replace the Main Encoder with one that has a grounded shaft.

Parts required:

Qty	Description	Part No.
1	Main encoder	W02-1836-05
2	Mounting screws	N90-3006-46

Note: You must use the new mounting screws listed above with the replacement encoder.

TS-450/690 Distorted TX w/ TNC

Service Bulletin no. 1002

Note: This bulletin supercedes bulletin ASB-994, dated 10 April, 1992.

We have received several reports of distorted transmitter audio when using a TNC controller such as the AEA PK-232 or Kantronic KAM, etc. The symptom will generally disappear if the transceiver and TNC units are powered from different sources.

Cause:
The audio output level form the TNC is generally too high and causes overload of the microphone amplifier circuit. In previous models such as the TS-440S the incoming TNC audio was inserted after the microphone amplifier. With the TS-850S it is inserted before the microphone amplifier. Just moving the insertion point to the output of the circuit is satisfactory since the drive level for FM packet is higher then that required for SSB.

Procedure:

Add a 10 dB attenuator to the PKD line on the IF unit (X48-3090-XX). This will prevent overmodulation of the microphone input circuit.

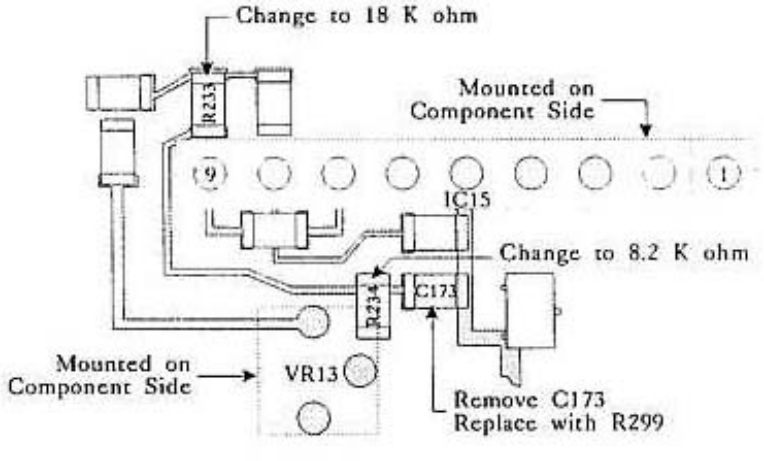
Change chip resistor R233 from 10 Kohm to 18 Kohm (RK73FB2A183J)
Change chip resistor R234 from 1 Kohm to 8.2 Kohm (RK73FB2A822J).
Delete chip capacitor C173 (100 pF) and add chip resistor R299, 1.5 Kohm (RK73FB2A152J).

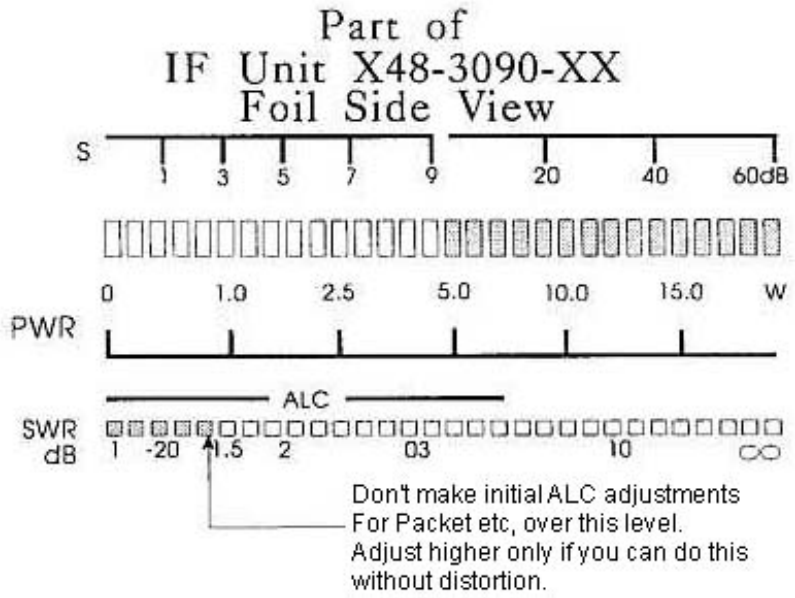
Add the following note to page 35 and 37 of the Instruction manual.

When adjusting for proper ALC levels with an AFSK RTTY terminal or Packet TNC terminal you should adjust VR-13 on the IF Unit for a reading similar to the one shown in the accompanying diagram.

Note: The transceiver and RTTY or TNC terminal should use separate power supplies, in order to prevent RFI (Radio Frequency Interference).

Caution: This modification requires soldering equipment rated for CMOS type circuits. It also requires familiarity with surface mount soldering techniques. If you do not have the proper equipment or knowledge do not attempt this modification yourself. Seek qualified assistance.





TS-450S TX frequency response

Service Bulletin no. 1004

We have received several reports concerning the transmit audio quality of this unit. Several reporters noted that the signal sounded "hard" or had a reduced bandwidth, while others noted a difference in the noise quality when switching between USB and LSB. We noticed a significant difference between the output power in LSB and USB on some of these sets.

Cause:
Improper adjustment of the 8.83 MHz tuning coils (L73, L76) on the RF unit (X44-3130-00) can cause these symptoms. The coils have two tuning points. One is reached when the tuning slug project above the surface of the coilk form. When tuned in this manner the bandwidth becomes narrow then normal and causes the symptoms noted above.

Alignment procedure:

Adjustment should be performed with the YK-88S1 (2.4 KHz) filter in line. If this filter is not preset you should select the THRU position for the 8.83 MHz IF.

Adjust L73 and L76 according to the instructions provided in the service manual (Item 6 of the Receiver adjustment). Ensure that the slug are preset well down in the coil form, then adjust for peak. You should reach this point before the top of the slug exist the coil form.

Next, readjust L74 and L75 (Item 8 of the Receiver adjustment).
Select the 6 KHz filter for both the 8.83 MHz IF and the 455 KHz IF.

Select a dial frequency of 14.100.4 MHz.
Select the USB mode.
Adjust L74 and L75 for maximum.
Select the LSB mode.
Readjust L74 and L75 for maximum.
Repeat steps 3c - 3f several times until you obtain a difference of 2 dB or less in the AF output when switching between USB and LSB.

Check Item 14, CAR point adjustment (Transmitter section) Menu items 11 and 12, and confirm that the transmitter power is equal for USB and LSB.

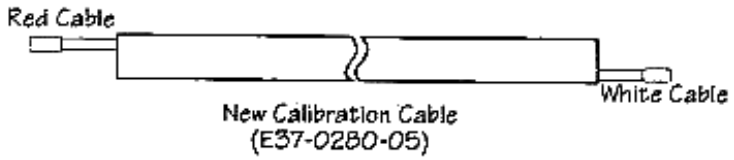
TS-450/690 Calibration cable change

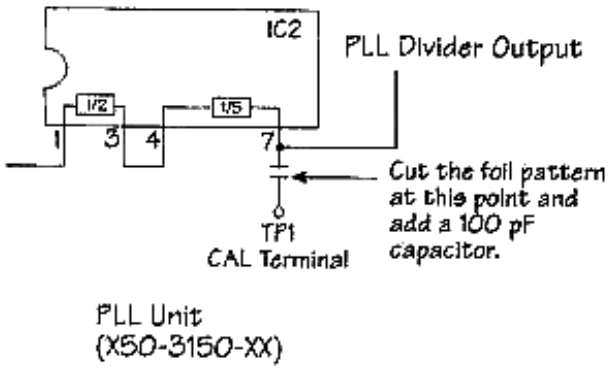
Service Bulletin no. 995

The TS-450/690 may not calibrate properly against WWW (JJY) when using the calibration cable that is supplied with early versions of these sets, (serial numbers below 311xxxx) and when an antenna that is shorted for DC is used. A dipole with a balun is a prime example of a DC shorted wire. A minor circuit modification that adds a 100 pF isolation capacitor should also be performed. Please refer to the diagrams below for modification notes.

Parts required:

E37-0280-05	Calibration cable assembly	1 Ea.
CK73FCH1H101J	100 pF capacitor	1 Ea.





Micro-input RFI modification TS450-TS690 Kenwood

By Pedro M.J. Wyns, RF- and biomedical-engineer.

History:
After buying a ts690 I got considerable trouble with the vox circuitry.
The Vox gain was always too high due to an excessive feedback resistance in the vox amplfier. Apparently a PCB-mounting failure as the schematic carried the right value. After correcting this problem I still got RF problems with nearby antennas, blocking the transmitter in TX.

Problem:
lack of decent RF-filtering on the micro-input circuitry.

Solution:
adding ferromagnetic cores and adjusting rc-filters on the IF-board.

Action:
remove the connectors on the right hand side of the IF board (underside transceiver front towards you). Unscrew the board and fold over to the left. Add 22 nF parallel to R282 1k on t he micro entry close to Connector 6. Add 1nF parallel to C177 close to the IC-15 input. Add 1nF parall el to C217 close to the vox amplifier.
Remove te micro in and ground from the number 6 connector. Feed the white micro wire through a two hole ferrite core. Feed the inner conductor through a small ferrite core as well Reconnect...

If you might be using an MFJ (=major fucking junk) voice keyer, disconnect the shit-unshielded micro cable and replace by high quality twin balanced micro cable. Only use PTT, Mic and GND.

This concludes the mod. Don't even think of doing this without the service man ual and some smd-practice.

Good Luck

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Belgium-Europe
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KAM-PLUS Problems!! with TS-450 & 850

A common problem when using a KAM-Plus multimode with the Kenwood TS-850 or TS-450 occurs when the KAM-Plus is coupled to the Accessory-2 socket on the back of the transceiver, producing noticable distortion of the transmitted audio when using the microphone in SSB mode..

The problem is easy to cure by disconnecting the Accessory-2 plug from the back of the tranceiver, but this meant moving the transceiver around every time one wished to operate on SSB..

The problem is caused by the input sensitivity of the rear Accessory-2 socket being set to high, so that it picks up very low level noise from the KAM-Plus and associated computer wiring, this mixes with the microphone signal, to produce the distortion.

The cure is to reduce the input sensitivity of the radio, thus reducing the chance of distortion, also it goes without saying that the output from the KAM-Plus must be increased to compensate for this.

With both the TS-450 and TS-850, adjusting the input sensitivity is straight forward and the transceiver manuals show you the appropriate control and its location.. This is in both cases VR18 to be found on the main board of the radio,(refer to manual) in practice I found that it was best to adjust this control fully counterclockwise..

Then we need to adjust the output from the KAM-Plus by varying potentiometer R28 and setting removable link (K9), this link is factory set on one post only, (in the open position)!! this should be connected shorting the two posts, thus putting the KAM-Plus into the high output position, and then potentiometer R-28 is adjusted to give full power out from your HF radio with very little ALC deflection, when the MIC gain is in the normal operating position..

Then I am sure you will find that your problem is over, you can now simply change from digital modes to SSB.. Remember if you have your Beacon activated to turn it OFF or it could cause a few comments when operating SSB..

TS-450S Intermittent receive fixed

After making a careful mobile installation, WB0BQV found his TS450S to have intermittent receive. He removed the screw that was going through the coax in his car and made a second installation in his truck. More intermittent. With some careful diagnosis he found that moving the coax connector up and down caused the change in signal. With the radio opened up, I found that moving the coax connector was breaking the contact between the wire from the center conductor and the board (W1 in the schematic). To save on pulling the filter board, I used a short piece of very flexible test prod wire to connect from the center of the UHF connector to W6 on the top of the PC board. W6 jumps over the contacts of a relay used only in the TS-690S. For added security, I also added another wire of the same material from the ground lug on the UHF connector to the end of D11 away from the coax connector. So now if the flexible back panel breaks the other wire too, it won't have so much effect. The coax connector is mounted on a 1/32" plated steel panel so is excessively flexible in mounting. Ideally that connector should be mounted far more stiffly for those that use real RG-8 coax.

TS-450,TS-850 feedback,ACC-2 Conn

Hi if you are using the ACC-2 connector to interface with your multi-mode controller, you may have had a problem with your transmitted audio signal being distorted, to eliminate this see bellow.

Set your meter on the radio to read ALC
PK232 OWNERS: if alsso using a VHF tranceiver, adjust the AFSK level for proper VHF operation as expalained in chapter 3 of the operating manual.If not adjust for proper SSB operation.

DSP - 1232 / DSP - 2232 Owners: Adjust the appropriate AFSK level control for proper SSB operation as expalined in chapter 3 of the operating manual.
Place the TNC in calibrate mode and press K to key the radio.
Adjust VR-13 on the TS-450 or VR-18 on the TS-850 so that the meter "Just comes off the peg" as described in the section titled "SSB Tranciever Final Adjustments" (in the TNC operating manual).
Press Q to quit the CALIBRATE mode

This modification should not affect any of the other normal operations of the radio..
Copy of service bulletin from AEA

TS-450 hidden functions

As users of the Kenwood TS-450S already known it is possible to configure the set to personel needs by hold down some buttons during Power on.
There are three buttons listed in the manual.

The menu of Power ON + LSB/USB is listed on page 54 from the manual
The menu of Power ON + M.IN is listed on page 55
The menu of Power ON + ENT is listed on page 83

As often usual in microprocessor controled equipment there are hidden keyboard combinations who make it possible to configure more functions then is listed in the manual.

At Power on + CLR + ENT a reset to factory defaults is taken place.
All memory programming is lost !
All filters are available (also these who are not fitted)

But there is something more!!

The receiver is able to receive from 30 kHz to 40 MHz

Transmitting is possible on

1620 kHz to 2000 kHz
3500 kHz to 4000 kHz
7000 kHz to 7500 kHz
10.0 MHz to 10.5 MHz
14.0 MHz to 14.5 MHz
18.0 MHz to 19.0 MHZ
21.0 MHz to 21.5 MHz

24.5 MHz to 25.0 MHz
28.0 MHz to 30.0 MHz

Unfortunately after power off and switching on the programming is returnd to the most of the old values, but the 100 memory places are still empty.
So one advice before start of experimenting note the contens of the memory places and configuration on a piece of paper, and read the "F" manual .

Until now I do not have a method to program the expanded receiving and transmitting frequencys into the TS-450S.
If someone knows how to do this plaese let me know.

TS-450S and KAM Plus info

Hi just found out a KINK in hooking up the TS450S to a KAM Plus for AMTOR op.

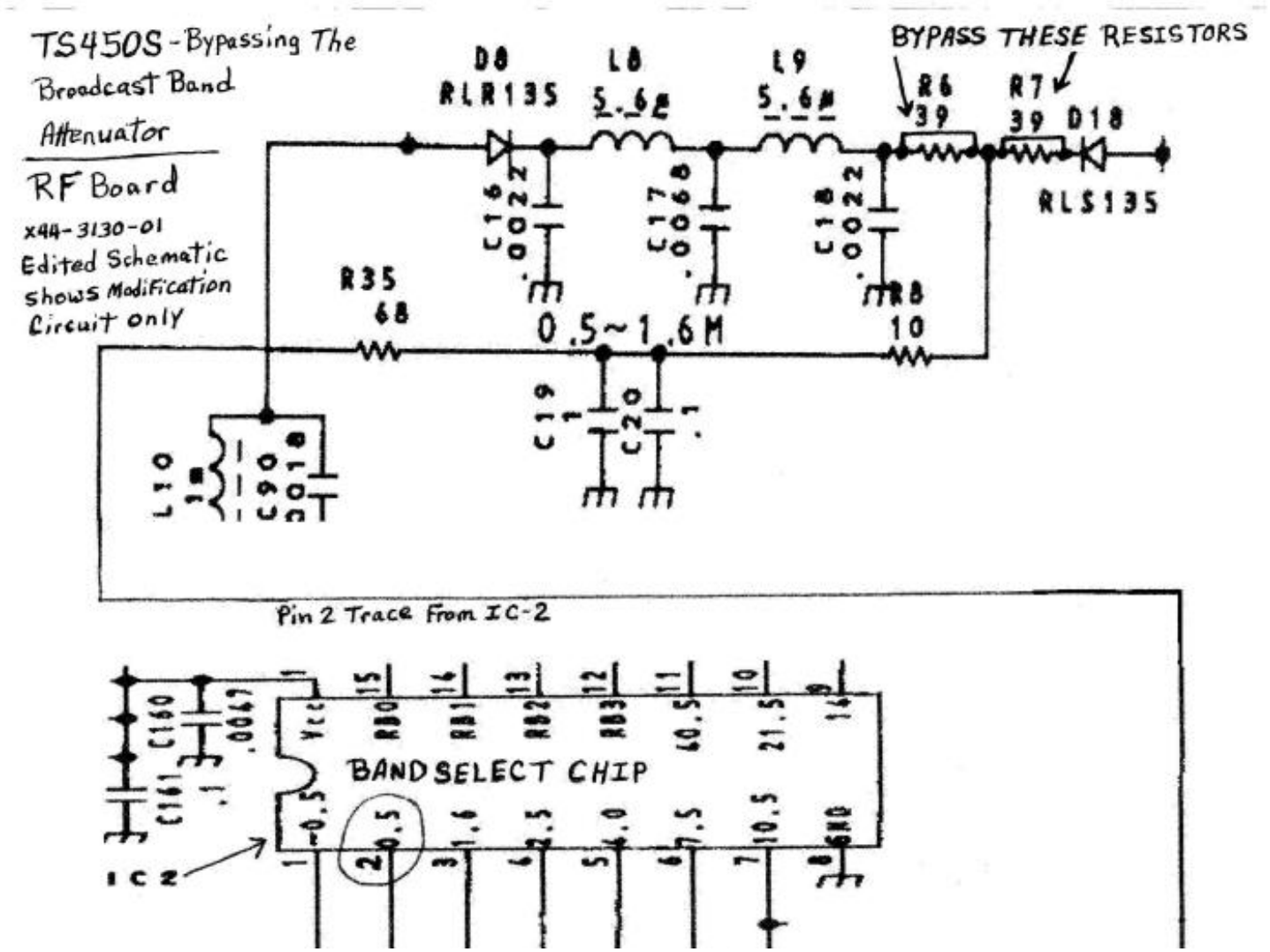
You have to turn ur Delay and CAR control to 0 to get it to work mode A.

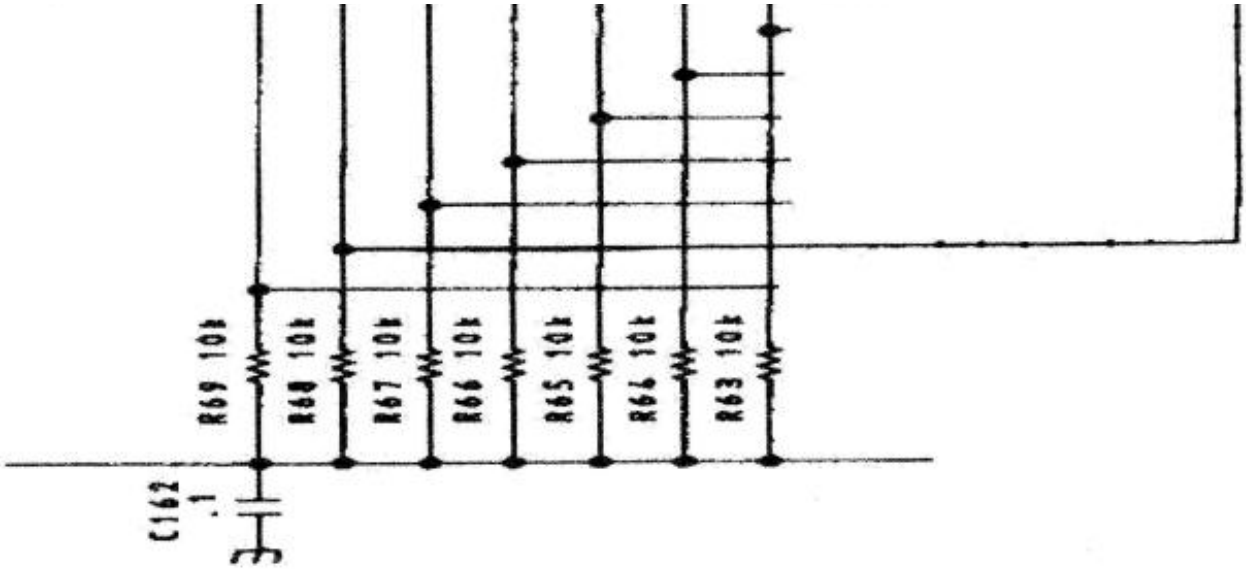
Neither control should be active when running AMTOR LSB but they are, TRUST ME.

TS-450S BCB Attenuator Circuit

This modification will bypass the BCB attenuator in the RF section of the TS450 series radio.

Although similar in many aspects to the TS850, there are circuit differences. And as anyone who has tried the TS850 mod on the TS450, quickly found out that it won't work.





TS450S
RF Board

* A Crude drawing of approximate Parts Layout For The BCB Attenuator Circuit.

IC2 is on The Top of The RF Board.

Pin #2

IC 2

on The Bottom side of IC 2 There will be 2 Rows of 8 - SmD Resistors one for each pin of IC 2. with RF Board upside Down Pin 2 is on The left side of IC 2, farthest from You

use an Ohm Meter Continuity Tester To Trace Pin 2 To This Point

Solder Joint

R6 39Ω

R7 39Ω

SmD Components located on Bottom of RF Board

By Pass each Resistor

R8 10Ω

R35 68Ω

* Be Careful Not to By Pass C19/C20 by mistake: SmD Capacitors are a Light Brown/Tan Color

C 19

C 20

SmD Resistors are usually Black

.5-1.6 Circuit Trace IS Labeled ON Top of RF Board

Solder point AS Seen Thru The Bottom OF the Board

The Circuit Traces For the .5-1.6m Circuit are labeled on the Top of the RF Board, use your Ohm Meter Continuity Setting To Trace points From Top side To Bottom side

" GIVE CREDIT WHERE CREDIT IS DUE " after months of Googleing, I wasn't able to find any info on this mod on the internet. A fellow who I only know as Jordan in Canada, emailed me the component values and numbers to bypass. Then after locating a readable schematic of the RF Board, I was able

to blow it up and " see " schematically where I needed to work. It was a little more difficult actually

finding the parts on the circuit board. Once I did; I was able to bypass the attenuator circuit. It gave a

marked improvement in reception from 500KHz to 1705KHz. Allow me to caution you; the work is a

little tedious. Extremely small components, and very close spaced. The area on the board you'll be working in is probably 4 inches square, so TAKE YOUR TIME; double and triple check each

component to make sure it is the right one before soldering on it.

**** **All soldering work will be done on the underside of the RF Board**. ****

First; for safety; disconnect all power and cables, turn the radio upside down with the front facing you

and remove the bottom cover. Once done you will see 2 circuit boards. The one on the right is the IF board. The one on the left is the RF board. This is the board you will be working on. First; examine the top side of the board, the circuit traces are labeled on the board.find IC-2, Pin-2, and you can visiually follow the trace to the section to work on. Once this is done, remove the screws from the board so you can turn it over to work on the back side. To turn the board over, you will need to unplug the 2 pin plug located at the back of the board in a cut-out section. You will need to unplug the green mini coax type plug located in the middle of the board next to where the optional CW filter installs. At the front of the board, you will need to unplug the 2 pin Blue wire plug located close to the left side of the board, and almost directly above the plug is a 1 inch wide ribbon cable about 3 inches long, Unplug one end.

This should allow you to turn the board over(not actually removing it from the radio).

If you've never had the board out before, it takes a little sliding and pulling to get the left front corner

lifted up and forward to be able to flip it over.

The wires are getting old and stiff, and on the plugs can break off sometimes. The wiring harness will

need to be moved around to get some of the screws out of the board. Once the board is loose, you

can stand it on its side and use you ohm meter to trace from the top of the board to the bottom side.

Locate Pin-2 on IC-2 on the bottom side.Lay the board over on its top and follow the trace to the point where it is marked .5 - 1.6 on the top side.

At that point there will be a SMD resistor located about 1/8th inch to the left. This should be R35, the

68 Ohm resistor. Check its value to confirm it is. Next in the line, you'll see 2 tan colored SMD's,

these should be C19 / C20. You should not be able to read resistance on these of course.

Following the circuit on around, the next component should be R8, a 10 Ohm resistor. Confirm

this with your meter. You're getting close. Follow the trace to the next SMD. This should be R7, a

black 39 Ohm resistor(part 1 of the attenuator). Confirm this with your meter. follow the trace to the

next SMD which should be R6, a black 39 Ohm resistor(part 2 of the attenuator). Confirm this with

your meter. When you are sure you are in the right section (especially .5 - 1.6 section), you can proceed with the modification. **It is as simple as soldering a very small piece of wire lead across each of the resistors** (R6 / R7) . But as simple as it is to say, it certainly isn't as simple to do. It's kind of like trying to solder a pinhead with a crowbar. It is recommended that you use a 15 watt, grounded iron to do the soldering with, and ground yourself against static discharge. I used pre-tinned lead wire cut from excess lead length from previous work. TAKE YOUR TIME !! it will be very easy to accidentally bridge components with a solder joint. Use a pair of needle nose pliers to bend the end of the lead wire into a " L " shape as long as the resistor is, (about 1/16th inch). Preheat the wire to melt the solder. I used silver solder, low melting temp. works faster with less heat. Put a drop of solder on the tip of the iron and touch each end of the resistor to melt the solder for a fresh joint. Using your needle nose pliers, hold the wire on the resistor, and heat each end to make the bridge connection. If you can gently tug at the wire and it dosen't come loose, then your connection is successful.

After you have bypassed R6 and R7, the Modification is done.You can now begin the process of putting the board back in the radio. Again; TAKE YOUR TIME. It's easy to miss a cable or plug, and go through the process of putting the radio together, only to have it not work. Your first thought will probably be " Oh man, the mod didn't work, it killed the radio " Back up; Take a breath, and of course take the radio back apart. But before you try to undo the mod, check for the obvious. Loose or disconnected cable, maybe a broken wire on a plug. Even a bent pin on a plug, or the antenna isn't plugged in, (it's happened).If you don't find anything obvious, then recheck your solder connections, checking for possible bridged connections.

When the modification is done correctly, you will see about a " 4 " S-Unit increase at 500KHz.

I hope this information is useful to many. 73, Andy - KU4XR

ATTENTION

The KB2LJJ takes no responsibility for any damage during the modification or for any wrong information made on this modification.